THE NYMPH OF DIPTEROPHLEBIODES SP. (LEPTOPHLEBIIDAE:EPHEMEROPTERA)[1]

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Since Demoulin (1954) established *Dipterophlebiodes* for *D. sarawacensis* (which was described from one male subimago), the imagos and nymph of the species from Sarawak have remained unknown. Peters and Edmunds (1970) in their revision of the Eastern Hemisphere genera delineated the genus based on Demoulin's description.

From material collected in West Malaysia, a new species of *Dipterophlebiodes* has been discovered. As the new species is known only from nymphs, female imagos, and male subimagos, the new species is not described herein. However the nymph of *Dipterophlebiodes* sp. is described and the relationships of the genus to other genera are discussed. The descriptions and figures correspond to those given by Peters and Edmunds (1970).

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Genus **Dipterophlebiodes**

Dipterophlebiodes Demoulin, 1954:129; Peters and Edmunds, 1970:187.

Mature nymph. Head prognathous. Antennae 1 1/2 times as long as maximum length of head. Mouthparts (figs. 1-7): dorsal hair on labrum as in fig. 4;

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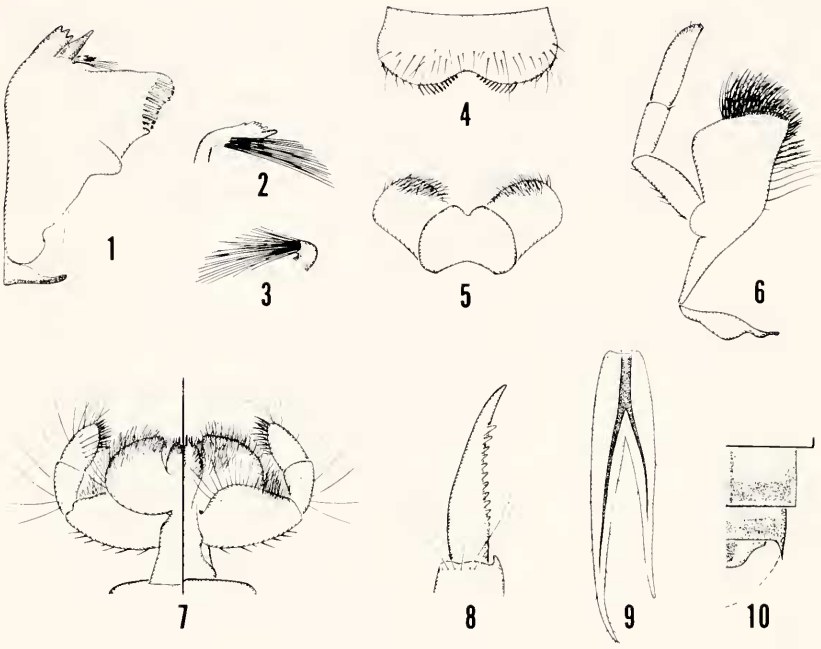

FIGURES 1-10, Nymph of *Dipterophlebiodes* sp. Fig. 1, left mandible. Figs. 2-3, prosthecae of mandibles: fig. 2, left; fig. 3, right. Fig. 4, dorsal view of labrum. Fig. 5, hypopharynx. Fig. 6, ventral view of right maxilla. Fig. 7, labium (ventral surface on left; dorsal surface on right). Fig. 8, claw. Fig. 9, gill 4. Fig. 10, dorsal view of right margin of abdominal segments 7-10.

submedian areas of hair ventrally. Left mandible as in fig. 1. Lingua of hypopharynx rectangular (fig. 5); superlingua of hypopharynx as in fig. 5, with a row of hair along anterior margin. Segment 2 of maxillary palpi shorter than length of segment 1; segment 3 a little longer than 1 1/2 times length of segment 2, triangular; hair on maxillae as in fig. 6. Labium as in fig. 7; segment 2 of palpi a little longer than 1/2 length of segment 1; segment 3 subequal in length to segment 2, triangular; glossae ventral to paraglossae. Legs (fig. 8): apex of claw hooked and narrow, denticles on claws progressively larger apically, apical denticle near apex of claw. Gills (fig. 9): gills on segments 1-7 alike; gills long, slender and deeply forked. Well developed posterolateral spines on segment 9 only (fig. 10). Terminal filament longer than cerci.

The above description is based on the following specimens: 4 nymphs, West Malaysia, trib. of Gombak Riv., Univ. of Malaya Field Studies Center, 16 1/2 mi.

N. of Kuala Lumper on Bentong Road, 28-1-70. (J.E. Bishop); 1 nymph, West Malaysia, trib. of Gombak Riv., 13 3/4 mi. N. of Kuala Lumpur on Bentong Road, 30-X-69 (J.E. Bishop). Adult specimens of the undescribed species are: 1 male subimago, West Malaysia, trib. of Gombak Riv., Univ. of Malaya Field Studies Center, 16 1/2 mi. N. of Kuala Lumpur on Bentong Road, 28-1-70 (J.E. Bishop); 1 female imago, West Malaysia, Gombak Riv., Univ. of Malaya Field Studies Center, 16 1/2 mi. N. of Kuala Lumper on Bentong Road, V-70 (J.E. Bishop). All specimens are in alcohol. Two nymphs, 1 male subimago, and 1 female imago are deposited in the collections of Florida A&M University. Two nymphs are deposited in the collections of the University of Utah, Salt Lake City, and one nymph is deposited in the collections of the University of Malaya. Association of the nymphs and adults of the undescribed species in based on the absence of hind wings and hind wing pads, and the abdominal color patterns of specimens collected from the same locality.

Dipterophlebiodes appears to be most closely related to *Habrophlebiodes* and *Gilliesia*. The nymphs of *Gilliesia* are unknown, but the nymphs of *Dipterophlebiodes* can be distinguished from those of *Habrophlebiodes* by the following combination of characters: (1) well developed postero-lateral spines occur on abdominal segment 9 only (fig. 10), (2) no metathoracic wing pads are present, and (3) the denticles on the claws occur almost the entire length of the claws (fig. 8). The nymphs of *Dipterophlebiodes* can be distinguished from those of all genera of the Leptophlebiidae by the following combination of characters: (1) the head is prognathous, (2) the lingua of the hypopharynx is rectangular (fig. 5), (3) the abdominal gills are long, slender and deeply forked (fig. 9), and (4) well developed postero-lateral spines occur on abdominal segment 9 only (fig. 10).

The male subimago of the undescribed species from West Malaysia appears congeneric with *D. sarawacensis;* however, the penes of the undescribed species are straight while those of *D. sarawacensis* are apically hooked. The female imago of the undescribed species possesses a ninth sternum which is deeply cleft apically and does not possess an ovipositor or egg guide. The undescribed species can be differentiated from *D. sarawacensis* by the dark brown body color and the dark brown clouds surrounding the cross veins in the fore wings.

The knowledge of the nymph of *Dipterophlebiodes* supports the probable phylogeny of the genus as given by Peters and Edmunds (1970). The nymph of *Dipterophlebiodes* retains the plesiomorphic *Paraleptophlebia*-like characters as does *Habrophlebiodes* and both

genera certainly possessed the same ancestor. The wings of the adults of both genera are reduced and the body size is smaller than *Paraleptophlebia.*

Literature cited

Demoulin, G. 1954. Les Ephéméroptères Leptophlebiidae de Borneo. Bull. (Ann.) Soc. Ent. Belgique 90:123-31, 4 figs.

Peters, W. L. and G. F. Edmunds, Jr. 1970. Revision of the generic classification of the Eastern Hemisphere Leptophlebiidae (Ephemeroptera). Pacific Ins. 12:157-240, 357 figs.

2.0146 The nymph of Dipterophlebiodes sp. (Leptophlebiidae: Ephemeroptera).

Abstract.—The nymph of *Dipterophlebiodes* is described for the first time from material collected in West Malaysia. As the Malaysian species is known only from nymphs, female imagos, and male subimagos, the new species is not described. The relationships of *Dipterophlebiodes* to *Habrophlebiodes* and *Gilliesia* are discussed.—William L. Peters, Florida A&M University, Tallahassee, FL 32307.

Descriptors: Ephemeroptera; Leptophlebiidae; *Dipterophlebiodes* sp., description of nymph; phylogeny of genus; SE. Asia.